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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,016	07/21/2006	Fumitoshi Matsuno	NAII127822	1998

26389 7590 12/08/2008
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EXAMINER	
PERROMAT, CARLOS	

ART UNIT	PAPER NUMBER
4147	

MAIL DATE	DELIVERY MODE
12/08/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,016	MATSUNO ET AL.	
	Examiner	Art Unit	
	CARLOS PERROMAT	4147	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/21/2006*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: In page 3, lines 14-16, the applicant makes use of quotation marks in providing a description of the behavior of the system disclosed. It is unclear to the examiner what the purpose of these marks is, since the text does not seem to contain a special use of language, nor is it a quotation of some external source. If the text does in fact refer to a special meaning of the language used, then further explanations are required. If the text uses language directly extracted from an external source, then that source should be referenced. If neither of these possibilities applies, and there is no other objective to the quotation marks, the applicant should remove them.

Appropriate correction is required.

2. The abstract of the disclosure is objected to because it is written using many paragraphs. The abstract should be only one paragraph. Correction is required. See MPEP § 608.01(b).

Claim Objections

3. Claims 5, 9-11 are objected to because of the following informalities: These claims make use of quotation marks. It is unclear to the examiner what the purpose of these marks is, since the text does not seem to contain a special use of language, nor is it a quotation of some external source. Even in the case that the text is a direct

quotation, such as listing a limitation from a parent claim, the use of quotation marks is unnecessary. Appropriate correction is required.

4. Claim 21 is objected to because of the following informalities: Claim 21 makes reference to the "methods" disclosed in claim 1. There is only one method disclosed in claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 19 and 20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Both claims 19 and 20 are directed to computer programs per se, which constitute non-statutory subject matter. The claims scope includes the mere code listings of said computer programs.

7. Claim 21 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 21 is directed to data per se which constitutes non-statutory matter.

8. Claim 22 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 22 is directed to a storage medium that contains data which does not imply any functionality. The fact that this data is embedded in a computer readable medium does not render the claim patentable, since such a result would exalt form over substance. Furthermore, the specification definition

of a storage medium, at page 17, lines 21 and 22, fails to limit the embodiments for this storage medium. Therefore, the claim is directed to embodiments that constitute non-statutory subject matter for this storage medium, such as carrier waves.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-12 and 14-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allard (U.S. Patent Publication No. 2003/0216834 A1) and Aliaga et al. (U.S. Patent Publication No. 2002/0176635 A1, "Aliaga" hereinafter).

Regarding claim 1, Allard teaches an “image generating method” (i.e., a method of providing a user interface, see par. [0013], with a heads-up display, see par. [0044]) “comprising the following steps: (1) a step of receiving environment information acquired by one or a plurality of space measurement sensor attached to a moving body” (i.e., receiving sensor information, see par. [0035], from sensors mounted on a robot, see par. [0036], where the robot can move, see par. [0034]); "(2) a step of receiving time when the environment information is received, and parameter of the space measurement sensor itself at the time” (implicitly, since the display can vary the representation of the data gathered based on the age of the data, see par. [0050], and, since one of the possible sensors is a spinning sonar scanner, see par. [0036], at least

the angle towards which the sonar is pointed to must be known); “(3) a step of saving history information representing the environment information, the time, and the parameter” (see par. [0050] for using the age of the sensor data in a map representing the environment of the robot, as well as representing a history of past positions of the robot); “(....) and (5) a step of generating virtual environment image seen from the (....) observation point based on the saved history information” (see par. [0053] for creating a panorama image from a series of snapshots, as well as storing individual snapshots).

Allard does not teach “(4) a step of receiving designation for virtual observation point” or that the virtual image is created with respect to this virtual observation point. Aliaga, however, teaches a method of creating new images from stitching together data from captured image sequences (see par. [0014]), and allowing a user to select a virtual point of view from which the virtual image is created (see par. [0015]). Because both Allard and Aliaga use a method of stitching pictures together in order to obtain a virtual panoramic image, as discussed above, and since Allard discusses the advantage of having the camera outside of the robot in order to obtain perspectives unattainable from the robot, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the virtual panoramic image creation from the robot as disclosed in Allard, with the virtual image generation from a user selectable virtual viewing point, as disclosed in Aliaga, in order to provide an advantageous perspective of the environment.

Regarding claim 2, Allard further discloses "(6) a step of generating image of the moving body itself seen from the (....) observation point based parameter of the moving body itself" (see par. [0065] for overlaying an image representing the robot within the display of the environment image, representing positions of the robot). Allard does not disclose that the viewing point is a virtual point, but that limitation has been addressed for claim 1 above. Allard also discloses "(7) a step of generating a composite image including the image of the moving body itself and the virtual environment image, using the virtual environment image and the image of the moving body itself" (implicitly, since the image of the robot is overlayed on the environment image).

Regarding claim 3, Allard further teaches that "the environment image is a plurality of still pictures" (see par. [0053] for generating a panoramic image from a series of still images).

Regarding claim 4, Allard further teaches that "the environment image is moving picture" (see par. [0039] for streaming MJPEG, Motion JPEG, from the robot).

Regarding claim 5, Allard further discloses that "the parameter of the moving body itself in step (6) is for any time point between a time point when a virtual observation point is designated, or close to that time point, to a time point when a generated composite image is presented" (see par. [0058] for representing the pose of the robot at a given moment).

Regarding claim 6, Allard further teaches that "the moving body can propel itself" (see par. [0034] for a description of several means for the robot to move).

Regarding claim 7, Aliaga also discloses that “the virtual observation point exists at a position looking at the environment around the moving body and/or the environment around a point the operator wants to see” (see par. [0015] for allowing a user to select the position of the virtual viewing point).

Regarding claim 8, Aliaga further discloses that “the virtual observation point exists at a position looking at the moving body from behind” (since the user can select to place the virtual viewing point at any position).

Regarding claim 9, Allard also teaches that “the parameter of the space measurement sensor itself in step (2) includes position and attitude of space measurement sensor itself and/or data, matrix or table representing a relationship between data space acquired by the space sensor itself and real space" (implicitly, since the sensor can be a spinning sonar scanner, see par. [0036], which inherently requires knowledge of the relative angle of the sonar, and provides range information).

Regarding claim 10, Aliaga further teaches that “generating based on history information in step (5) is selection of any image contained in the environmental information based on closeness of position of the space measurement sensor itself at the time the environmental information is acquired, and the virtual observation point" (see par. [0030] for storing camera position and attitude as images are taken, see par. [0038] for using the images taken closest to the virtual viewing point).

Regarding claim 11, Aliaga further teaches that “the generation based on history information in step (5) is new generation based on history information" (i.e., the image generation is a dynamic process using static images, see par. [0015]).

Regarding claim 12, Allard also discloses that "the virtual environment image is still picture" (see par. [0052] for generation of panoramic pictures, and see par. [0053], for requiring the user to update the panoramic image).

Regarding claim 14, Allard also teaches that “position of the moving body is included in the parameter of the moving body itself” (see par. [0076] for storing the position of the robot as obtained from a GPS sensor).

Regarding claim 15, Allard also teaches that “attitude of the moving body is further included in the parameter of the moving body itself” (see par. [0058] for presenting the current pose of the robot).

Regarding claim 16, the combination of Allard and Aliaga, as discussed for claims 1 and 2, teaches a “presentation method for presenting a composite image generated using the method of claim 2” (since the methods disclosed in Allard and Aliaga both are for presenting information to a user).

Regarding claim 17, Allard discloses an “image generating system” (a system generating a user interface to control a robot, see par. [0013], see par. [0033] to [0041] for hardware components), “comprising a moving body” (i.e., a robot, see par. [0034]), “(....) the moving body being provided with space measurement sensor for acquiring environment information” (see par. [0035] and [0036] for sensors mounted in the robot to obtain environment information), “a control section (....) wherein the control section carries out the following functions: (a) a function of saving history information representing the environmental information” (see par. [0050] for using past sensor information, as well as the age of the information), “the time when the environmental

information was acquired" (see par. [0050], where the age of the information is used), "and parameter of the space measurement sensor it self at the time the environmental information was acquired" (implicitly, since a possible sensor is a spinning sonar scanner, which requires knowledge of the relative angle of the sensor at the time of measurement) "(....) and an information acquisition section (....)" (see par. [0038] for receiving information from the robot).

Allard does not disclose "(b) a function of receiving information for designated virtual observation point; and (c) a function of generating virtual environment image seen from the virtual observation point based on the saved history information". Aliaga, however, teaches a method of creating new images from stitching together data from captured image sequences (see par. [0014]), and allowing a user to select a virtual point of view from which the virtual image is created (see par. [0015]), performed by a computer, see par. [0053]. Because both Allard and Aliaga disclose systems for stitching pictures together in order to obtain a virtual panoramic image (see Allard, par. [0053]), as discussed above, and since Allard discusses the advantage of having the camera outside of the robot in order to obtain perspectives unattainable from the robot (see par. [0096]), it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the virtual panoramic image creation from the robot as disclosed in Allard, with the virtual image generation from a user selectable virtual viewing point, as disclosed in Aliaga, in order to provide an advantageous perspective of the environment.

Regarding claim 18, Allard teaches "further comprising an information acquisition section, the information acquisition section being for acquiring parameters of the moving body itself" (see par. [0076] for receiving positions for the robot), "wherein the control section further carries out the following functions: (d) a function of generating image of the moving body itself seen from the (....) observation point based on parameter of the moving body itself" (see par. [0065] for overlaying an image representing the robot within the display of the environment image, representing positions of the robot). Allard does not disclose that the viewing point is a virtual point, but that limitation has been addressed for claim 17 above; Allard also discloses "(e) a function of generating a composite image including an image of the moving body and the virtual environment image, using the virtual environment image and the image of the moving body itself" (implicitly, since the image of the robot is overlayed on the environment image).

Regarding claim 19, the combination of Allard and Aliaga, as discussed for claim 1 above, teaches a "computer program for causing a computer to execute the steps of the methods of claim 1" (since the methods disclosed are to be executed by computers, see Allard, par. [0040], and Aliaga, par. [0053]).

Regarding claim 20, the combination of Allard and Aliaga, as discussed for claim 17 above, teaches a "computer program for causing a computer to execute the function of the control section of claim 17" (since the methods disclosed are to be executed by computers, see Allard, par. [0040], and Aliaga, par. [0053]).

Regarding claim 21, the combination of Allard and Aliaga, as discussed for claim 1 above, teaches “data containing information representing the virtual environment image or the composite image generated using the generating methods of claim 1” (since a digital representation of both virtual image and data from real environment are generated, see discussion for claim 1 above).

Regarding claim 22, the combination of Allard and Aliaga, as discussed for claim 21 above, teaches a “storage medium for storing the data of claim 21” (since the methods disclosed are to be executed by computers, see Allard, par. [0040], and Aliaga, par. [0053], they inherently require a computer-readable storage medium containing the data in order to operate on said data).

11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allard (U.S. Patent Publication No. 2003/0216834 A1) and Aliaga et al. (U.S. Patent Publication No. 2002/0176635 A1, "Aliaga" hereinafter) as applied to claim 2 above, and further in view of Hiroyuki et al. (Japanese Patent Publication No. 2000-237451, provided by the applicant, "Hiroyuki", hereinafter).

Regarding claim 13, neither Allard nor Aliaga teach that “the image of the moving body itself contained in the composite image of step (7) is a semi-transparent image, a transparent image, or a wireframe image”. Hiroyuki, however, teaches a method of displaying a vehicle overlayed over a background, using transparency, in order to allow better visibility for a user who is controlling a vehicle in the simulation, see abstract.

Because both Allard and Hiroyuki disclose methods for improving the visibility of an environment in which a moving object is controlled (see Allard, par. [0096]), it would have been obvious to combine the moving object representation shown in Allard with the transparency technique shown in Hiroyuki in order to allow a user to see objects obstructed by the representation of the moving object. Moreover, since both Hiroyuki and Aliaga teach methods in which a background image simulating an environment is generated and modified based on the user actions representing a movement of the focal point (see Aliaga, par. [0015], and see Fig. 7 in Hiroyuki), it would have been obvious to one of ordinary skill in the art to combine the transparency technique taught by the combination of Hiroyuki and Allard, with the virtual image and user selectable viewpoint as disclosed in Aliaga, in order to provide a semi-transparent image of a moving object overlayed on a generated panoramic scene, facilitating the control of said moving object.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARLOS PERROMAT whose telephone number is (571) 270-7174. The examiner can normally be reached on M-TH 8:30 am- 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kieu-Oanh Bui can be reached on (571) 272-7291. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KIEU-OANH BUI/
Supervisory Patent Examiner, Art Unit 4147

CARLOS PERROMAT
Examiner
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